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EXAMINER

PATEL, GAUTAM

ART UNIT PAPER NUMBER

2655

DATE MAILED: 07/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,653

Applicant(s)

MORI ET AL.

Examiner

Gautam R. Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,7,9,11,13,19 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9,21,22 and 24 is/are allowed.
- 6) ☒ Claim(s) 1,3,7,11,13 and 19 is/are rejected.
- 7) ☒ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Response to Amendment

1. This is in response to amendment filed on 5-13-04 (Paper # 10).
2. Claims 1-3, 7, 11, 13 and 19-24 remain for examination. Claims 21-24 are newly presented for examination.

Election/Restriction

3. Claims 4, 6, 8, 10, 12 and 14-18 are withdrawn from further consideration by the examiner pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species [spies other than fig. 1-5], there being no allowable generic or linking claim.

The Applicants are urged to cancel non-elected claims.

Applicants are reminded that **upon the cancellation of claims to a non-elected invention, the inventorship must be amended** in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h). Applicants are urged to cancel the non-elected claims.

Claim Objection

4. Claim 23 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 23 is essentially duplicate of old claim 9 which is now independent claim and has ALL the limitation of claim 23 and some more.

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Claim Rejections - 35 U.S.C. § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 3, 7, 11, 13 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over "Applicants Admitted Prior Art" [AAPA], (hereafter AAPA) in view of Nagahama et al., US. patent Re. 35,332 (hereafter Nagahama).

As to claim 1, AAPA discloses the invention as claimed [see Figs. 20-25], including a light source, a first diffraction element, and a first photodetector comprising:

a light source [fig. 23, unit 506] emitting a light beam [pg. 11, lines 9-19];

a first diffraction element [fig. 20, unit 508] diffracting a returned light beam based on the light beam emitted from said light source [pg. 11, line 14 to pg. 12, line 3]; and

a first photodetector [fig. 23, unit 507] detecting the returned light beam diffracted by said first diffraction element [pg. 11, lines 9-19],

wherein said first photodetector has four photodetection parts sectioned by a first section line substantially parallel to the direction in which a condensed spot of the returned light beam diffracted by said first diffraction element is moved by a variation in the wavelength of said light source and a second section line orthogonal to said first section line [pg. 12, line 17 to page 13, line 8],

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wherein the returned light beam diffracted in said first and second regions of said first diffraction element forms condensed spots at positions apart from each other on opposite sides on said first section line with respect to the intersection of said first and second section lines of said photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22],

wherein the returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forms condensed spots on the four photodetection parts of said first photodetector or on said first section line [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22]; and

that the focus state can be detected by operating the outputs of the four photodetection parts in said first photodetector, and the spatial variation corresponding to said focus state is astigmatism [fig. 21 and; pg. 3, line 6 to pg. 4, line 22, pg. 5 and pg. 12, line 17 to page 13, line 8].

AAPA discloses all of the above elements, including a first diffraction element and astigmatic method for photodetection. AAPA does not specifically disclose well known details of different regions that a diffraction element could have as different sections or how they are arranged.

However, it is well known in the art that most diffraction elements have sections or regions on them according to desired light control mechanism. Also Nagahama clearly discloses that it well known in the art to divide diffraction element into two regions [fig. 10A unit 23].

Also Nagahama also clearly discloses that gratings can be divided into six areas [see fig. 3, fig. 4, fig. 6 etc.], [as claimed by the applicants]; and

wherein the first, second, third, fourth, fifth and sixth regions of said first diffraction element provide each light beam with a spatial variation corresponding to a focus state on an optical recording medium [col. 8, lines 23-57].

Nagahama does not specifically disclose that first and second dividing lines intersecting each other as first and second regions, and third, fourth, fifth and sixth regions obtained by equally dividing the remaining two regions in second diagonal positions by a third dividing line. In other words Nagahama does

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not discloses details of divisions exactly as claimed or six divisions of the circular diffraction element to the extent claimed. Both AAPA and Nagahama are interested in improving the diffraction elements which controls the light beams.

One of ordinary skill in the art at the time of invention would have realized that different designs require different types of diffraction devices and gratings can be formed in different shapes and sizes and circular diffraction elements with six or more division is well known and expected in the art. Therefore, it would have been obvious to have used a diffraction element with six divisions as arranged as an diffraction element having two regions in first diagonal positions in the system of AAPA as taught by Nagahama because one would be motivated to arrange the gratings according to system requirement in the system of AAPA and provide better diffraction quality with single device, thus reducing number of parts in a system and saving money. As to exactly divide the regions, Nagahama clearly teaches that structure of the diffraction device is not restricted to above example [device 13], but it can be adequately formed in another manner [col. 8, lines 38-45]. In other words one of ordinary skill in the art would have been able to arrange the diffraction device of Nagahama which as six divisions in a two regions in first diagonal position among four regions divided by first and second dividing lines intersecting each other as first and second regions, and third, fourth, fifth and sixth regions obtained by equally dividing the remaining two regions in second diagonal positions by a third dividing line, in absence of criticality, as taught by Nagahama.

7. As to claim 3, Nagahama discloses:

the returned light beam diffracted in the third, fourth, fifth and sixth regions of said first diffraction element forms condensed spots [col. 8, lines 23-57]. As to rest of the claim, AAPA discloses substantially in the center of the four photodetection parts in said first photodetector [fig. 21 and; pg. 3, line 6 to pg. 4, line 22, pg. 5 and pg. 12, line 17 to page 13, line 8].

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8. As to claim 7, AAPA discloses:

said astigmatism is provided in a direction substantially at 45 degree with respect to said first and second section lines of said first photodetector [fig. 21 and; pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].

9. As to claim 11, AAPA discloses:

a second diffraction element [fig. 23, unit 509] provided in an optical path between said light source and said first diffraction element, and splitting a light beam emitted from said light source into a main light beam and first and second sub light beams [page 11, line 9 -19];

a second photodetector [fig. 25, unit 160 to 162] having two photodetection parts divided into two by a section line substantially parallel to said first section line of said first photodetector [page 3, line 6 to page 5, line 22]; and

a third photodetector [fig. 21 & 25, unit 160 to 162] having two photodetection parts divided into two by a section line substantially parallel to said first section line of said first photodetector [page 3, line 6 to page 5, line 22],

said first diffraction element diffracting a first returned light beam from said optical recording medium based on said main light beam and guiding said diffracted light beam into said first photodetector, while diffracting second and third returned light beams from said optical recording medium based on said first and second sub light beams and guiding said diffracted light beams into said second and third photodetectors [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said first returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots at positions apart from each other on opposite sides on said first section line with respect to the intersection of the first and second section lines of said first photodetector, said first returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots substantially in the center

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of the four photodetection parts in said first photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said second returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots on the section line of said second

photodetector, said second returned light beam diffracted in said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots in two photodetection parts in said second photodetector [pg. 12, line 17 to page 13, line 8 and pg. 3, line 6 to pg. 4, line 22].,

said third returned light beam diffracted in said first and second regions of said first diffraction element forming condensed spots on the section line of said third photodetector, said third, fourth, fifth and sixth regions of said first diffraction element forming condensed spots in the two photodetection parts in said third photodetector [pg. 3, line 6 to pg. 4, line 22 and pg. 12, line 17 to page 13, line 8].

10. As to claim 13, it is rejected for the similar reasons set forth in the rejection of claims 1 and 7, supra.

11. As to claims 19, it is claim corresponding to claim 1 and it is therefore rejected for the similar reasons set forth in the rejection of claim 1, supra. As to the added limitation of 45 degree [see fig. 21(a) and 21(c).

Nagahama was cited as prior art reference in paper no. 7, mailed 11-13-03.

12. Applicant's arguments filed on 5-13-04 (Paper # 10) have been fully considered but they are not deemed to be persuasive for the following reasons.

13. In the REMARKS, the Applicant argues as follows:

A) That: "In view of the following discussion of the *criticality* [original emphasis] of the present claimed division of the diffraction element, it is

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submitted that the present claimed invention is not obvious over the cited prior art." [page 19, paragraph. 1; REMARKS].

FIRST: Two reasons were given for six division of a diffraction gratings as claimed. Nagahama already shows six divisions [see figs. 2-7], and clearly states that "diffraction device 13 is **NOT** [emphasis added] restricted to the above, but can be adequately formed in another manner. In other words these six division and its arrangement does NOT change the operation of the device at all. Therefore arrangement of division is not critical as explained by Nagahama.

SECOND: Careful reading of arguments on page 19 and 21 shows that at NO place the Applicants has explained why six division as claimed will be better than six divisions as presented by Nagahama. Only explanation in those pages is about how the diffraction element works which is exactly as disclosed by Nagahama.

THIRD: It seems the Applicants are asking for a proof that six division diffraction element as claimed is indeed well known. As a proof two patents are enclosed which clearly shows that these kind of diffraction elements are well known in the art. For example see patent 5,644,565 by Toda et al. fig. 1 (c) and fig. 6 (b). Also see patent 6,137,752 by Sakai fig. 6, unit 3.

B) That: "**Nagahama** relates to the Foucault method while the present invention is based on the astigmatism method." [page 19, paragraph. 2; REMARKS].

Even though this argument [presented as explanation of six divisions] is totally unrelated to six division of diffraction elements, the Examiner has addressed it.

FIRST: Nagahama was NOT used for this limitation, AAPA was, so naturally Nagahama may not show this.

SECOND: One of ordinary skill in the art knows that Foucault method and astigmatism method are interchangeable. One also knows that Foucault

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technique is effected by the external disturbance as compared to astigmatism technique. So even though both are interchangeable in most applications, Foucault has all the advantages of astigmatism and some more and thus inherently Foucault incorporates astigmatism within itself and produces same results more accurately.

Allowable Subject Matter

14. Claims 9, 21, 22 and 24 are allowed over the prior art of record, for the same reasons given in prior office action.

Other prior art cited

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Holtslag et al. (US. Patent 6,538,978) "Multi-layer optical record carrier..".
- b. Horinouchi et al. (US. patent 5,790,502) "Optical pickup ..".
- c. Tezuka et al. (US. patent 5,793,725) "Optical information ..".
- d. Toda et al. (US. patent 5,644,565) "Optical recording medium ..".
- e. Sakai (US. patent 6,137,752) "Optical pickup device".

16. **THIS ACTION IS MADE FINAL.** See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

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calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact information

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.

Gautam R. Patel
Primary Examiner
Group Art Unit 2655

June 26, 2004



**GAUTAM R. PATEL
PRIMARY EXAMINER**